

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1. (Currently Amended) A tissue engineered construct analytical imaging system for use in connection with at least one culture well having a tissue engineered construct therein and positionable in an enclosed environment, the system comprising:

an imaging device positioned within ~~in operational communication with~~ the enclosed environment and configured to obtain three-dimensional image data reflective of at least a portion of the tissue engineered construct in a well area of interest in the at least one culture well, without the removal of the culture well from the enclosed environment; and

a computer controller configured to at least one of:

- (i) receive data from the imaging device;
- (ii) analyze the data for determining at least one desired parameter within the well area of interest; and
- (iii) output data reflecting results of an analysis.

2. (Original) The system of claim 1, wherein the imaging device is at least one of a camera, a digital camera, a scanner, a scanning device, a plurality of cameras, a video camera, a digital video camera and a device capable of capturing an image.

3. (Original) The system of claim 1, wherein the computer controller is at least one of a computing device, a computer, a personal computer, a controller, a circuit board, a laptop, a personal digital assistant, a networked computer and a server.

4. (Original) The system of claim 1, wherein the computer controller is further configured to control a mechanical loading mechanism for loading the tissue engineered construct.

5. (Original) The system of claim 1, wherein the at least one culture well is positionable upon the imaging device.

6. (Cancelled)

7. (Original) The system of claim 1, wherein the well area of interest includes at least the tissue engineered construct in the culture well.

8. (Currently Amended) The system of claim 1, wherein the computer controller is further configured to at least one of expand, contract, manipulate, ~~[[and]]~~ modify, or any combination thereof, the well area of interest.

9. (Original) The system of claim 1, wherein data reflecting a plurality of well areas of interest is obtained by the imaging device.

10. (Cancelled)

11. (Original) The system of claim 1, wherein data reflective of a plurality of well areas of interest is obtained by the imaging device for a respective plurality of culture wells positioned within the enclosed environment.

12.-17. (Cancelled)

18. (Currently Amended) The system of claim 1, further comprising a storage device in communication with the computer controller and configured to store at least one of the following: data, image data, well culture data, well area of interest data, construct area of interest data, incubator data, parameter data, digital input data, ~~[[and]]~~ analog input data, or any combination thereof.

19. (Original) The system of claim 1, further comprising an input device in communication with the computer controller and configured to transmit user input commands to the computer controller.

20. (Currently Amended) The system of claim 1, further comprising a display device in communication with the computer controller and configured to display at least one of the following: data, image data, well culture data, well area of interest data, construct area of interest data, incubator data, parameter data, digital input data, analog input data, user input data, graphical data, analytical results, ~~[[and]]~~ images, or any combination thereof.

21. (Cancelled)

22. (Original) The system of claim 1, wherein, after the data is obtained by the imaging device and received by the computer controller, a user can manipulate at least

one of the well area of interest and a construct area of interest for use in further data collection for the at least one well culture.

23. (Original) The system of claim 1, wherein the computer controller is further configured to uniquely identify a culture well in a plurality of culture wells.

24. (Cancelled)

25. (Original) The system of claim 1, wherein the well area of interest includes a construct area of interest, and wherein the desired parameter analyzed is the area of the tissue engineered construct within the construct area of interest.

26.-29. (Cancelled)

30. (Currently Amended) The system of claim 1, wherein the tissue engineered construct is at least one of the following: tissue, genetic material, bioartificial tissue, bioartificial tendon, a cellular construct, [[and]] an organic construct, or any combination thereof.

31. (Original) The system of claim 1, wherein the tissue engineered construct is cells cultured in a three-dimensional collagen gel.

32. (Original) The system of claim 1, wherein the tissue engineered construct is anchored within the culture well on at least two ends thereof.

33.-35. (Cancelled)

36. (Currently Amended) A computer-implemented method of obtaining and analyzing images of a tissue engineered construct, the method comprising ~~the steps of~~:

(a) positioning at least one culture well having the tissue engineered construct therein in an enclosed environment; and

(b) obtaining, from an imaging device positioned within the enclosed environment, three-dimensional image data reflective of at least a portion of the tissue engineered construct in a well area of interest in the at least one culture well, without the removal of the culture well from the enclosed environment.

37. (Currently Amended) The method of claim 36, further comprising ~~the step of~~ receiving the data reflective of the well area of interest.

38. (Currently Amended) The method of claim 36, further comprising ~~the steps of~~:

analyzing the data; and

based upon this analysis, determining at least one desired parameter within the well area of interest based upon the data.

39. (Currently Amended) The method of claim 36, further comprising ~~the step of~~ outputting data reflecting results of the analysis.

40. (Cancelled)

41. (Currently Amended) The method of claim 36, further comprising ~~the step of~~ controlling a mechanical loading mechanism for loading the tissue engineered construct.

42. (Cancelled)

43. (Currently Amended) The method of claim 36, further comprising ~~the step of~~ at least one of the following: expanding, contracting, manipulating, and modifying, or any combination thereof, the well area of interest.

44. (Currently Amended) The method of claim 36, further comprising ~~the step of~~ obtaining data reflecting a plurality of well areas of interest.

45. (Cancelled)

46. (Currently Amended) The method of claim 36, further comprising ~~the step of~~ obtaining data reflective of a plurality of well areas of interest for a respective plurality of culture wells positioned within the enclosed environment.

47.-52. (Cancelled)

53. (Currently Amended) The method of claim 36, further comprising

~~the step of~~ displaying at least one of the following: data, image data, well culture data, stored data, well area of interest data, construct area of interest data, incubator data, parameter data, digital input data, analog input data, user input data, graphical data, analytical results, ~~and images, or any combination thereof.~~

54. (Currently Amended) The method of claim 36, wherein, after the data is obtained, the method further comprising ~~the step of~~ manipulating at least one of the well areas of interest and a construct area of interest for use in further data collection for the at least one well culture.

55. (Currently Amended) The method of claim 36, further comprising ~~the step of~~ uniquely identifying a culture well in a plurality of culture wells.

56.-64. (Cancelled)

65. (Currently Amended) The method of claim 36, wherein, prior to positioning the at least one culture well in the enclosed environment, the method further comprises ~~the step of~~ anchoring the tissue engineered construct within the culture well on at least two ends thereof.

66. (Currently Amended) The method of claim 36, wherein the data reflective of the well area of interest is at least one of the following: imaging data, visual data, visible light data, infrared data, ultraviolet data, magnetic resonance engineering data, computer tomography data, radiation data, ~~and x-ray data,~~ or any combination thereof.

67. (Currently Amended) The method of claim 36, wherein the data is a digital image, the method further comprising ~~the step of~~ pre-defining the desired resolution of the digital image.

68. (Cancelled)

69. (Currently Amended) A tissue engineered construct imaging and analysis apparatus for use in connection with at least one culture well having tissue engineered constructs therein and positionable in an enclosed environment, the apparatus comprising imaging means positionable in the enclosed environment and for obtaining three-dimensional image data reflective of at least a portion of the tissue engineered construct in a well area of interest in the at least one culture well, without the removal of the culture well from the enclosed environment.